# Hand-Held Health Physics Probes and Instruments

NUCLEAR MEASUREMENT SOLUTIONS FOR SAFETY, SECURITY & THE ENVIRONMENT

CSP Family

α β γ n

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# The CSP™ (CANBERRA Smart Probes) family offers a fully integrated solution for hand-held health physics.

## Maximize Efficiency and Reduce Total Cost of Ownership

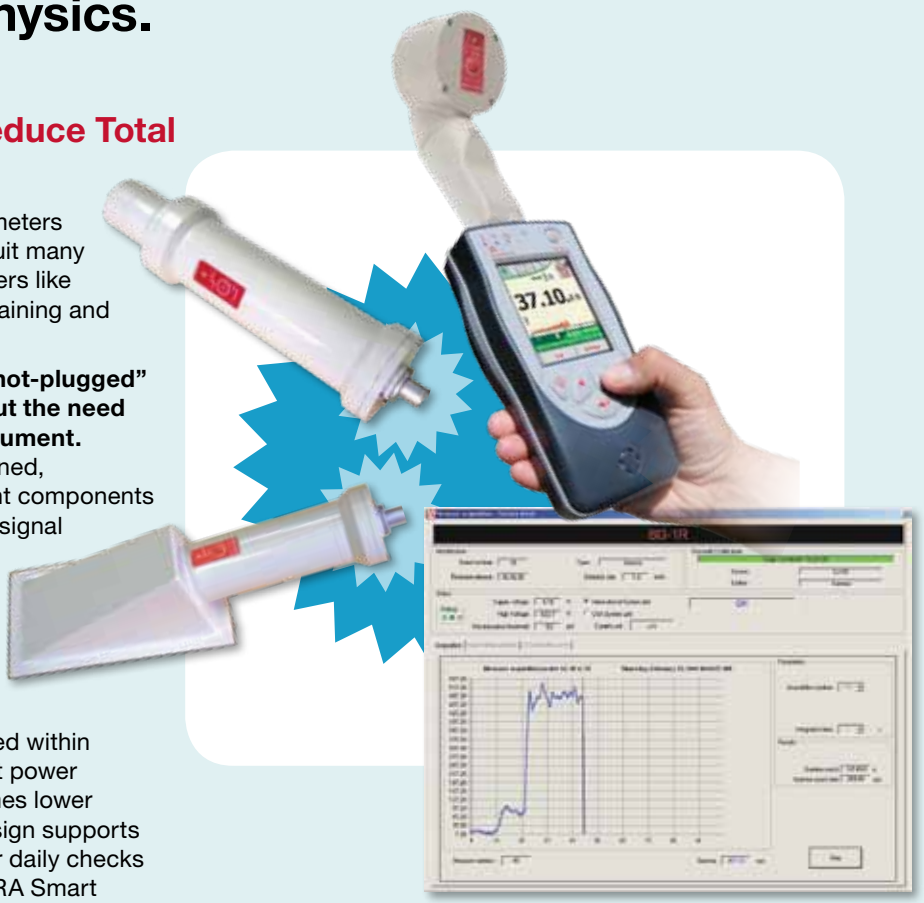
CANBERRA offers dose rate and survey meters for a wide range of users and probes to suit many applications. Generally, health physics users like to invest in one particular instrument so training and expertise can be maximized.

**All CANBERRA Smart Probes can be "hot-plugged" to any CANBERRA survey meter without the need to power down or re-calibrate the instrument.** CANBERRA Smart Probes are self-contained, encompassing all necessary measurement components (high voltage, amplifier, discriminator and signal processing). Therefore each probe is separately calibrated and set up to match a dedicated application, and all probes are compatible with any CSP survey meter without any further specific setup required.

The innovative electronic design embedded within each CSP probe drives extremely efficient power consumption that is approximately ten times lower than that of conventional probes. This design supports direct connection to a laptop USB port for daily checks and/or calibration, using CSPS-CANBERRA Smart Probe Software which enables the host instrument to remain in use.

**The CSP Family offers digital communication and therefore no critical measurement component relies on cable quality.**

CSP probes can easily be used in third party systems via the CSP-PL programming library that simplifies development and reduces time to its completion.

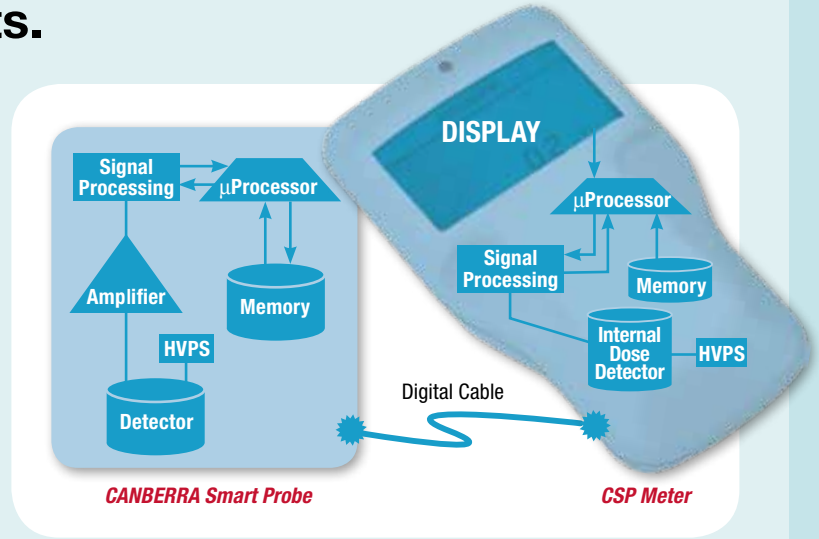


*CSP™ - CANBERRA Smart Probes and CSPS™ - CANBERRA Smart Probe Software shown with the Colibri survey meter*

CANBERRA

# CSP™ meters and probes deliver significant benefits.

- More instruments are available in the field
- Considerably less calibration and set-up time
- 100% compatibility with all instruments
- Reduced total cost of ownership and daily workload
- Reduced need for paper and log books
- Improved accuracy of data transcription




1 Cable Fits ALL

***Where this logo appears, only one unique cable is required for all instruments and probes!***

***CANBERRA CSP™ probes and instruments: a smart approach!***

# Hand-Held Health Physics CSP family

## CANBERRA Smart Probes - CSP™ :

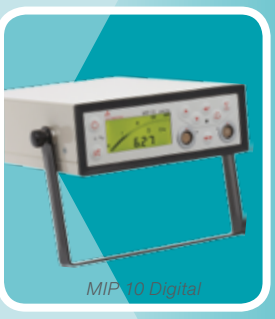
- A complete range of self controlled smart probes
- A variety of versatile instruments, battery powered and easy to carry
- A choice of communication modules to suit a wide range of applications
- Calibration and Setup Software to manage probe and instrument quality

## Real time measurement display on meters and computers

Colibri®

Radiagem™

PC


MIP 10 Digital

Avior® 2000

- CSP probe is a fully integrated sub-system taking and transmitting measurements in real time to host instrument
- All key measurement components (high voltage, amplifier, discriminator and signal processing) are located in the probe
- Each probe stores all calibration related settings and all data logging points
- Full interchangeability without recalibration enables increased uptime of instruments in the field, thereby maximizing the investment

***Nuclear measurement solutions for safety, security and the environment***

# CSP-CANBERRA Smart Probe Range

## Optimized application support for Colibri and computer-based system with:

- CSP-PL: Programming library to support CSP probe integration in third party applications
- CSP-COM: Wired or wireless Communication modules that extend CSP probe applications

**SABG-15+**
*GM Pancake*

*Multi-purpose 15 cm² contamination probe*

α β γ

**SPAB-15**
*PIPS Detector*

*Alpha-beta discrimination in high gamma background (15 cm²)*

α β

**SB-20**
*Plastic Scintillator*

*20 cm² beta contamination check in high gamma background*

β

**SA-20-2**
*ZnS Scintillator 20 cm²*

*Small area alpha contamination check in high gamma or neutron background*

α

**SA-32**
*ZnS Scintillator 32 cm²*

*Personal alpha contamination probe*

α

**SA-100**
*ZnS Scintillator 100 cm²*

*Large area alpha contamination check*

α

**SB-100**
*Plastic Scintillator 100 cm²*

*Large area beta contamination check*

β

**SAB(G)-100**
*Plastic/Zn-S Phoswich 100 cm²*

*Alpha/beta discrimination on large contamination area and personal frisking*

α β

**SG-1R**
*NaI(Tl) Scintillator 1" x 1"*

*Low dose-rate and gamma contamination probe*

γ

**SG-2R**
*NaI(Tl) Scintillator 2" x 2"*

*Very low dose-rate and gamma contamination probe*

γ

**SVLD**
*Energy Compensated CsI(Tl)*

*Very low H*(10) dose equivalent rate probe for public working area checks*

γ

**SX-2R**
*NaI(Tl) Scintillator 1.5" x 3mm*

*Low energy gamma and alpha contamination check in humid environment*

α, X, γ

**SN-S**
*Moderated Helium 3 Tube*

*Neutron presence detection*

η

**STTC**
*Energy compensated G-M Detector*

*Wide range H*(10) dose rate equivalent to ICRP-60*

γ

**TELE-STTC**
*Energy Compensated G-M Detector*

*Wide range H*(10) dose rate equivalent to ICRP-60 with telescopic pole*

γ

# Dose-Rate and Survey Meters

CANBERRA offers hand-held instruments for all levels of users, from the technician performing a specific task on site to the highly knowledgeable health physicist. These instruments are focused on particular applications and can be used either as hand-held, semi fixed or fixed devices.

With CSP Smart approach, the instrument is selected to match the situation specifics, taking into account that any CSP probe will always be compatible.

MIP 10 Digital

AVIOR 2000/4000

## AVIOR 2000/4000 and MIP-10 Digital - Desktop Frisker/Integrator

**Highlights:**

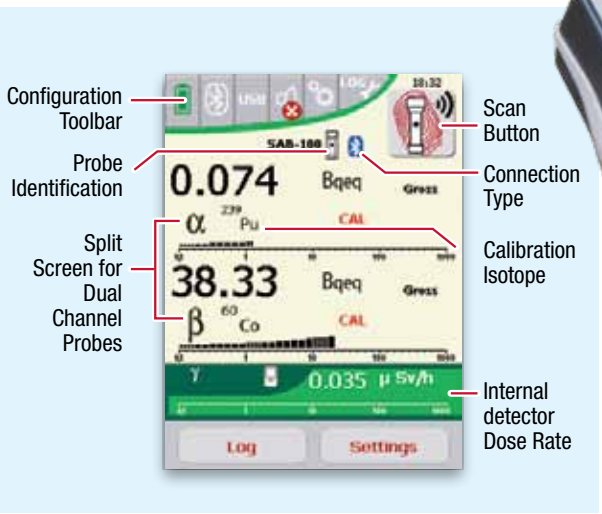
- Rugged and simple to use with dedicated buttons
- Integration over time to improve MDA
- Back-up built-in rechargeable battery for 40 hours run time
- Analog-like bargraph with digital display
- MIP-10D is compatible with previous generation Nardeux probes with the second connector

## Radiagem 2000/4000 – Lightweight Survey Meter

**Highlights:**

- Dose-rate equivalent up to 100 mSv/h with Radiagem 2000 (10 rem/h with Radiagem 4000)
- Integration over time with data logging
- Rugged and waterproof to support daily duties
- Connection to external CSP probes

Radiagem 2000



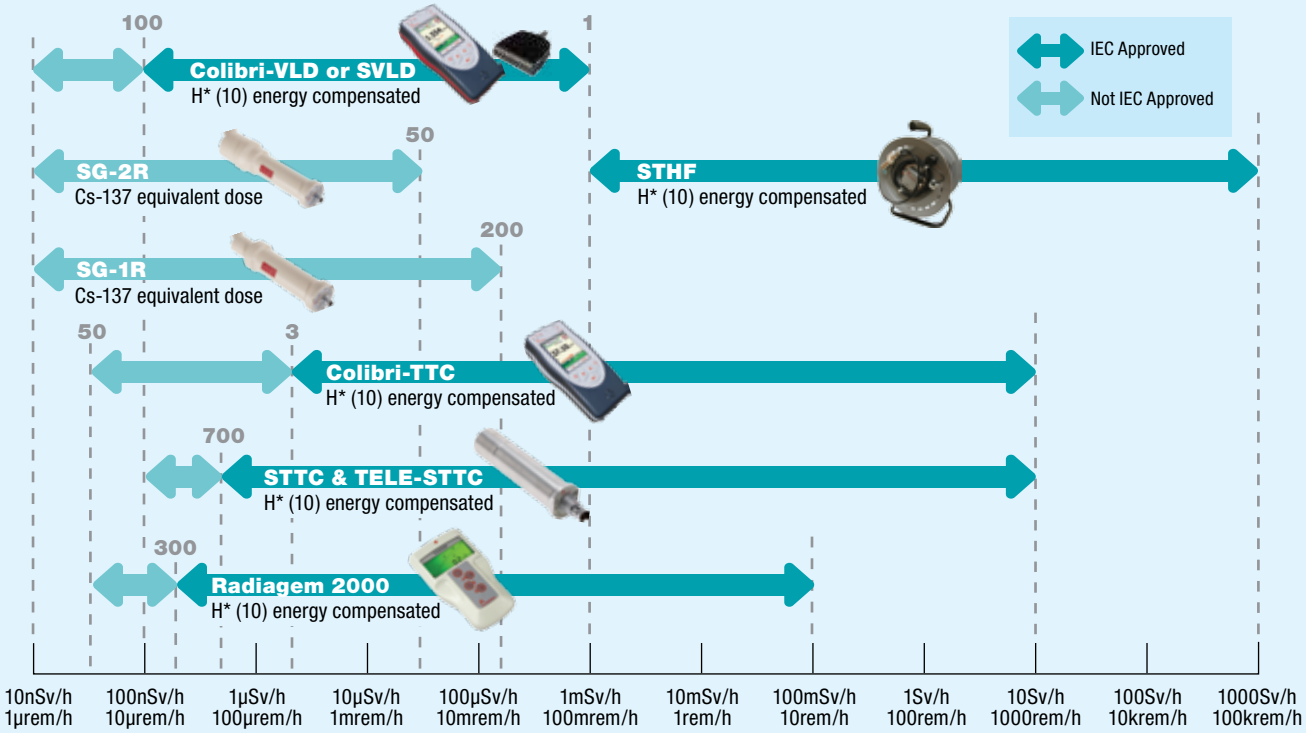
## COLIBRI Hand-Held Communication ALARA Platform

**Highlights:**

- Embedded dose detector: VLD for low dose-rate (Red) or TTC for wide range (Grey)
- Mapping application with GPS, barcode or RFID reader
- Wired and/or wireless connection for up to 8 probes
- Dual simultaneous alpha and beta reading with SAB probes

## Dose rate equivalent measurement ranges

*(SG-1R and SG-2R are measuring dose-rate equivalent to Cs-137)*



# Contamination Probes

Each contamination probe has been designed for a specific measurement task. All probes are compatible with all CSP instruments using the same cable or communication module, without the need for any specific setup. Detection area and probe shape can vary to better support site specific configurations such as areas with difficult or complex access (glove boxes) or to improve frisking situations (personal and/or object).

## SABG-15+ Alpha/Beta/ Gamma Frisking Probe

**Highlights:**

- 15 cm² alpha, beta, gamma frisker probe
- Connects directly or via cable to CSP instrument
- Internal pancake GM detector can be changed out easily – not soldered in place

## SPAB-15 Discrimination Alpha/Beta Probe

**Highlights:**

- 15 cm² PIPS detector alpha/ beta discriminating contamination probe
- CANBERRA PIPS detector technology delivers minimal cross talk between alpha and beta and reduced gamma background sensitivity
- Significantly better MDAs than similar probes on the market
- Ruggedized detector face appropriate for harsh environments

## SA-20-2, SA-32 and SA-100 Alpha Only Probe

**Highlights:**

- 20, 32 or 100 $cm^2$ ZnS scintillator
- Appropriate for most alpha contamination situations from glove boxes to personal frisking
- Very low sensitivity to gamma and neutron background
- Easy to change mylar window protection

## SB-20 and SB-100 Beta Only Probe

**Highlights:**

- 20 or 100 $cm^2$ plastic scintillator
- Appropriate for most beta contamination situations from small objects to personal frisking
- Mylar, alpha transparent (SB-100/A) or aluminum alpha stopper (SB-100/B) window material.

## SAB-100 and SABG-100 Alpha/Beta Probe

**Highlights:**

- 100 $cm^2$ plastic/ZnS phoswich, SABG-100 is more sensitive to gamma
- Lowest crosstalk on the market minimizing the beta influence to alpha counting
- Supports simultaneous alpha and beta contamination check with single measurement

# Contamination & Dose Equivalent Rate Probes

Each probe has a very specific design to match both the environmental parameters (fuel pool monitoring in water, remote dose-rate monitoring, public area monitoring) and the user protection requirement (distance from the measurement point). TTC-based probes feature CANBERRA's unique Time-To-Count design that offers a wide measurement range, a long detector live time and excellent measurement linearity with no fold over effect. CSP dose-rate probes cover very low to very high dose-rates with sufficient overlap. All probes utilize energy compensated detectors and meet the latest ICRP requirements.

## Contamination Probes

### SX-2R Low-energy X-Ray Probe

**Highlights:**

- For low energies of 5 keV and above
- Able to detect alpha contamination in high humidity conditions
- Energy button to reduce high energies

### SG-1R and SG-2R Gamma Probe

**Highlights:**

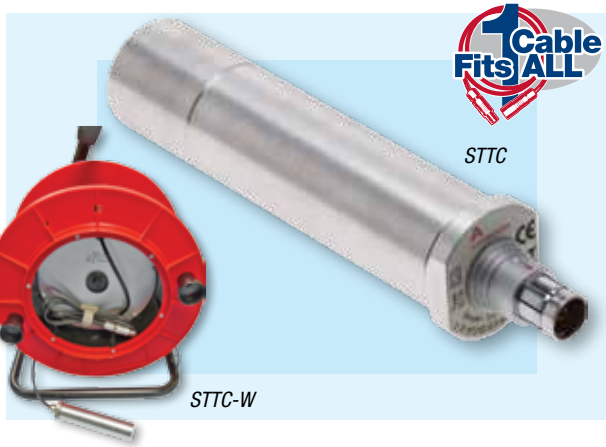
- 1" x 1" or 2" x 2" NaI(Tl) scintillator probe
- Displays either count-rate or dose-rate equivalent to $^{137}Cs$
- Energy button to reduce low energies and confirm high energy presence

### SN-S Neutron Detection Probe

**Highlights:**

- Lightweight neutron solution
- Compliant with IAEA and ANSI N42.34 neutron detection requirements
- No microphonics false reading

# Dose Equivalent Rate Probes




## STTC and STTC-W Wide Range Probe

**Highlights:**

- Wide range gamma dose rate from background up to 10 Sv/h (1000 R/h) with one detector only
- Time-to-Count technology delivers prolonged detector life
- STTC-W waterproof version with 20 meter (65 feet) cable on a reel

## TELE-STTC Wide Range Telescopic Probe

**Highlights:**

- Identical detector as for STTC
- Telescoping gamma probe extends to 3.3 meters (10.9 ft)
- Extremely light weight
- Supports both Radiagem and Colibri with two holders

## SVLD Very Low Dose probe

**Highlights:**

- Offers maximum sensitivity in a compact size for quicker detection
- Accurately measures background level and does not saturate before 1 mSv/h (100 mrem/h)
- Ideal for public area control and smuggling detection
- Direct connection to CSP instrument (cable not mandatory)

## STHF-R Ultra High Flux Gamma Probe

**Highlights:**

- Dose-rate up to 1000 Sv/h (100 000 rem/h)
- Waterproof with 50 meter cable on a reel
- High cumulative dose capability with remote electronics
- Compatible with Radiagem and AVIOR only

# CSP Accessories

CANBERRA CSP accessories have been developed to simplify daily Health Physics duties depending on application specifics. We have accessories ranging from a simple handle to support one-handed usage to a sophisticated wireless communication module to control acquisition from a remote and safe position. Some accessories are dedicated to a specific instrument and others are compatible across the entire range.

DONGLE-AB Converter

## DONGLE-AB Converter from Legacy Alpha/Beta Probes to CSP Instruments

**Highlights:**

- Qualified with DP2, DP6, SHP380AB and Model 43.93
- Brings smartness to old conventional probes
- Supports direct alpha/beta discrimination with an unmatched MDA

## PNK-R Converter from Traditional Pancake Probes to CSP Instruments

**Highlights:**

- Qualified with 500V or 900 V pancakes probes
- Brings smartness to old conventional probes
- Old pancake probe with PNK-R becomes a smart hot swappable package for all CSP instruments

## AUDIO-R Audio Option for Radiagem

**Highlights:**

- Brings head-set audio capability to Radiagem
- Smart audio analysis to deduce stable background and report radiation trends
- Support probe external connection

## CSP-COM: CSP Network Interfaces

**Highlights:**

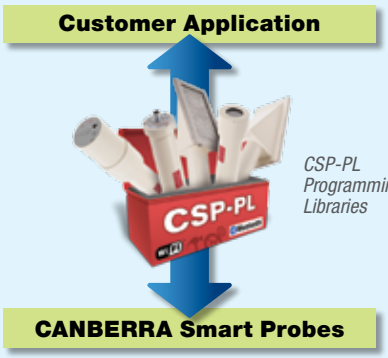
- Enhances CSP™ Probe connectivity by adding Bluetooth®, Wi-Fi®, Ethernet, RS-485 or RF network interfaces
- Allows unattended remote measurement and monitoring with CSP Probes
- Models available for hard-wired or wireless connections

*CSP-COM digital wireless and wired versions shown*

## CSP-PL: CSP Communication Software

**Highlights:**

- Software development kit that allows for integration of CSP Probes with a customer's own software application
- Combined with CSP-COM network interfaces, the CSP-PL Programming Libraries allow the user to create a network of CSP Probes and to monitor their outputs via computer

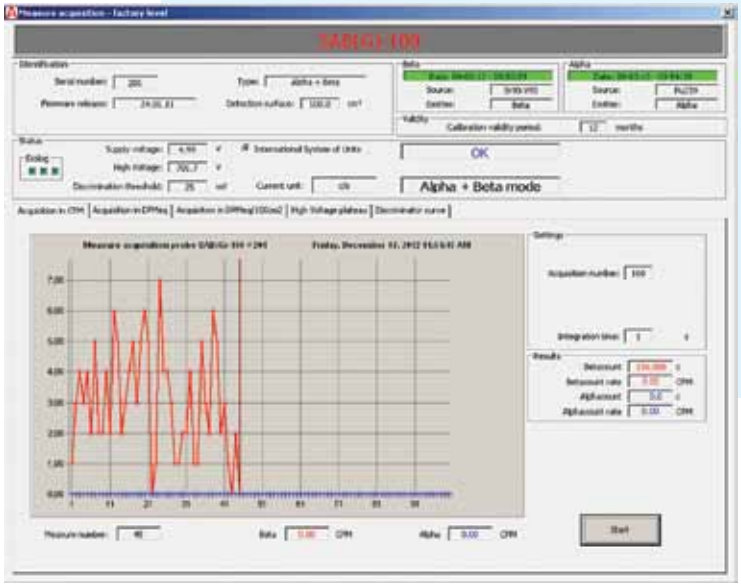



*CSP-PL Programming Libraries*

## CSPS Calibration and Setup Software for CSP Probes and Instruments

**Highlights:**

- Checks all probes and instrument operational parameters with direct connection to computer
- Manages all logged data points in instruments and probes
- Upgrades firmware of CSP meters and probes
- Automatic calibration wizard can be tuned to match user's exisiting radioactive sources and proceed to CSP calibration



# CSP Accessories

*Continued*

## CSP-POLE for Radiagem and One CSP Probe

**Highlights:**

- Connects one CSP probe (S-100, SG, S-32, SN or S20) to Radiagem with 2 meter (6.5 ft) extension
- Convenient for areas with difficult access
- Very compact to carry when folded
- Re-use existing straight CSP cable

*CSP-POLE for Radiagem and one CSP probe*

## AVIOR/MIP-10D Support

**Highlights:**

- Holds one AVIOR or MIP-10D with one probe for frisking check point
- Optional probe holder for any of the CSP contamination probes
- Very stable with heavy base

*AVIOR/MIP-10D support*

*Carrying case*

## CSP-HANDLE for One Meter and One CSP Probe

**Highlights:**

- Converts one meter (Colibri or Radiagem and one probe (S-100, SG, SN, S-32 or S20) into a one hand operational measurement tool
- Very compact and durable

*CSP-HANDLE Handle*

## Carrying Cases

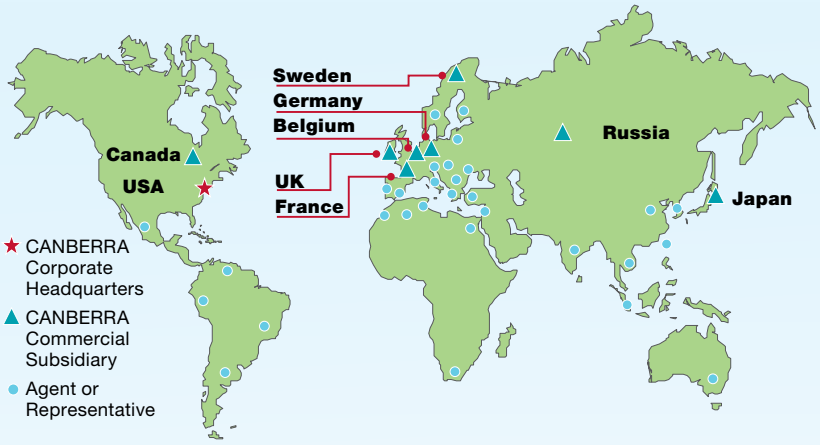
CANBERRA offers a variety of standard carrying cases (with foam cut to fit products) or carrying bags to cover most applications and probe/instrument configurations. Do not hesitate to contact us for any specific request.

# Excellent CSP™ services are available from CANBERRA

**CANBERRA offers extensive resources for the servicing of the CSP family of probes and instruments.**

Each probe and each instrument comes with a service manual that provides clear step by step instructions and illustrations for operating and troubleshooting. The manual includes a full parts list and spare parts can be ordered directly from CANBERRA. If CANBERRA service personnel are required, our local experts can provide operational support, technical support and consulting services in many locations around the world. CANBERRA also provides recalibration services for all CSP equipment.

**CSP Service Manuals**




**CANBERRA Service augments your technical team, assists during peak periods, provides expert advice, trains staff and maintains your systems for optimal performance.**

***We look forward to partnering with you.***

**CANBERRA SERVICES**

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ISO 9001
SYSTEM
CERTIFIED

**Nuclear Measurements Business Unit of AREVA — Nuclear Measurement Solutions for Safety, Security and the Environment**

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